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Instructions for national forest
range plant work, 1925. [1925]

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UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE

INSTRUCTIONS FOR NATIONAL FOREST RANGE PLANT WORK, 1925

PURPOSE

It is essential that forest officers and users of national forest ranges be familiar with the identity, forage value, and growth requirements of the important plants which make up the forage crop on their respective forests in order to facilitate the immediate application of available data on poisonous plants, seasons of grazing, carrying capacity, adaptability of range, and natural revegetation by range management. Forest officers may, therefore, be required to collect and prepare range plant specimens and to observe and record information regarding them. From these collections herbaria are being formed and analyses of the information developed in the Washington and district offices and such herbaria are now required in most supervisors' and rangers' offices. Once a fairly complete collection has been made accessible in the ranger's or supervisor's office, the local officer has at hand a means of identifying most of the plants with which he is unfamiliar. The Forest Service collections of range plant specimens, with their appended data, present the fullest economic and ecological information on native west-American plants in existence. Such information is the groundwork for publications on national forest range plants.

In order that there may be uniformity in collections and records and that the handling and identification of plant specimens may be expedited, it is essential that these instructions be followed in the handling of specimens, at every step from the collection in the field, through transmittal to the Washington office, to the filing of the identified and properly mounted specimens in the office herbarium.

SELECTION OF SPECIMENS

Plants should be collected in quadruplicate, typical plants being selected during their flowering or fruiting stage, and should consist of the whole plant, or where too large representative portions of the parts above ground and enough of the root system to indicate clearly its character. Where all these parts can not be obtained in a single specimen, two or more specimens, as needed, should be collected. When this is done, care should be taken to see that these several portions are kept together in the collection; that they receive but one number, and are placed in the same folder. Mature fruits are essential for specific identification of most sedges, and for numerous rushes, borages, crucifers (mustards), umbellifers (parsnips), composites, and other plants. Whenever practicable, both flowering and fruiting specimens of leguminous plants, especially lupines and locoweeds, should be submitted.

As the sheets for mounting the specimens are $11\frac{1}{2}$ by $16\frac{1}{2}$ inches, all specimens should come within these limits. If the plant is too large to be preserved in its normal position, it should be bent in Δ , N , or M shape, to bring it within the proper dimensions. Grasses should not be bent at the "nodes," or joints.

To obtain the root system dig down around the plants with a stick or some instrument until the plant can be taken out without breaking essential parts of the root. Look for underground runners connecting with the other plants. Carefully work off the adhering soil by washing, rubbing between thumb and forefinger or by gently tapping. Loose soil and grit in the folder will injure the more delicate plant structures and make identification difficult.

If plants must be carried in from the field to the press they will keep fairly well wrapped in moistened leaves and rolled in a slicker or coat tied to the back of a saddle. Plants may also be carried safely in a cantina if wrapped

with moistened leaves or paper and tied with string. The sooner plants are placed in the press the better, for they soon become wilted or bruised.

METHOD OF DRYING

It is necessary to press the plant specimens properly, otherwise they will be worthless for a permanent record, and identifiable with difficulty if at all. To press them lay a couple of blotters on the lattice frame of the press. Then place an open standardized species folder on the blotters. Lay the plants on the open folder allowing plenty of room for each plant, straightening out the leaves and flowers as much as possible. Stems, roots, and other parts more than a quarter of an inch in thickness should be thinned on the back with a knife. Place only plants of one species within a given folder; fold the cover over the plants and number the folder in pencil with the same number as used for the Form 767, then place one or more blotters on top. It is well to use two blotters if they can be spared, but one will do. Never place plants directly between blotters. Proceed as above until all plants are in the press. Place the other lattice frame on the top and then tighten the straps or place weights on top to give a pressure of up to 50 pounds. About 12 to 24 hours after the plants have been placed in the press the blotters should be changed. It is important that the blotters be changed every day. At the same time the plants should be straightened out and the leaves that have become folded can be laid flat. It is usually easier to straighten the leaves after they have been in the press a short time than while they are strictly fresh. The damp blotters should be scattered in the sun to dry. Change the blotters every 24 hours until the plants are dried. This usually takes about a week.¹ The dried plants can be kept in the press or tied up in a newspaper in a place safe from rodents and insects, until the end of the field season.

NUMBERING

Specimens should be numbered consecutively. Collectors should not duplicate their numbers by beginning each season with No. 1, but should have the numbers continuous from year to year. Joint collections sent in as one collection from a forest, and in which the collectors' numbers more or less overlap, should either have the numbers modified (preferably by a prefixed initial) or else be given forest numbers (inserted immediately above the collectors' numbers) in addition to the collectors' numbers, so that a report on the collection will be free from all ambiguity. Otherwise, when a report on the collection is received from Washington, misunderstanding is bound to ensue.

NOTES

Special effort should be made to collect accurately all the essential data for each plant specimen at time of collection and to record them on the Form 767. This form properly filled out should accompany each specimen submitted for identification. The data should, if possible, be condensed so that they will come within the spaces provided, and care should be taken in the editing and spelling. If in the case of important plants, more notes are obtained than can be written on the Form 767, such data should be written separately, in single-spaced, short-lined typewriting and on one side only of a good quality of white paper, in order that such information may be filed permanently on the mounting sheet with the specimen itself and Form 767. If the data are too extensive for this, they should be written on white cards 4 by 6 inches, notes for only one species on a card.

TRANSMITTAL OF COLLECTIONS AND REVIEW BY DISTRICT BEFORE FORWARDING TO WASHINGTON

Upon completion of the preparation of a collection in the field *two complete* sets will be forwarded to the district forester; the third set will be retained

¹ More detailed information on plant collecting will be found in Bureau of Plant Industry Circular 442, "Directions for Preparing Herbarium Specimens of Grasses," by A. S. Hitchcock and Agnes Chase, and Department Circular 76, "Directions for Collecting Flowering Plants and Ferns," by S. F. Blake.

in the office of the forest upon which the collection was made, and the fourth will be retained in the office of the ranger on whose district the collection was made.

To expedite reports on plants, collections will be reviewed by competent authority in the district offices prior to submission to Washington. Plant material which can readily be identified by the reviewer, or which is improperly prepared or so incomplete identification can not be made, will be removed from the collection at that time. A copy of the letter reporting on those plants identified in the district will be forwarded to Washington with letter of transmittal for the remainder of the collection.

The district forester will retain one of the two sets of unidentified specimens for his files and forward the other set, with the exception of plants rejected, *unmounted*, to Washington for identification and permanent retention there.

In shipping material, great care should be exercised to see that it is securely wrapped to prevent breakage. The best plan is to wrap the plants between pieces of "Beaver Board," or similar material, which are slightly larger than the folded plant folder.

DESIGNATION OF CORRESPONDENCE AND MATERIAL

In shipping range plant material to Washington the outside of the package should indicate clearly that it is intended for the Branch of Grazing. In correspondence, the designation form "GS, Plant Identification, _____,"
 (Name of forest)
 should be used except in the case of collections exclusively composed of poisonous plants where, to avoid needless cross-file references, the designation form "GS, Poisonous Plants, _____,"
 (Name of forest)
 correspondence entails features other than those of mere identification.

IDENTIFICATION OF THE SPECIMENS

Identifications of range plant specimens in Washington are made by experts of the Bureau of Plant Industry, and by certain outside specialists who cooperate directly with that bureau.

REPORTING ON THE COLLECTIONS

Upon receipt of identifications from the Bureau of Plant Industry, the Washington office will furnish to the district forester, in triplicate or quadruplicate, such identifications in an alphabetical list by four groups: Grasses, grasslike plants (chiefly sedges and rushes); nongrasslike plants (exclusive of trees and shrubs); and trees and shrubs. One copy of the identifications will be retained in the district office, and the supervisor's office, ranger's office, and collector will be furnished one each of the remaining copies. When available, economic notes will be furnished as photostatic negatives. Notes for additional collections of a species, once they are furnished the district, will be furnished forests and collectors by the district office. Notes for most grasses, however, are available in booklet form. Knowledge respecting range forage plants is necessarily cumulative, the product of the observations of many men in many fields; its attainment will necessitate the cooperation of the entire field force of the Forest Service concerned with range problems. Available information not given in the notes received or not shown on Form 767 submitted to Washington should be sent to Washington on cards as provided under "Notes."

HERBARIUM

Upon receipt of the identifications by the district, supervisors', and rangers' offices the plants should be mounted, if this has not already been done, and the correct botanical as well as the correct common name should be entered in the appropriate place on Form 767, and this form pasted in the lower right hand corner of the mounting sheet. Following mounting and attachment of the completed Form 767, the range plant specimens should be filed by botanical names in the alphabetical-forage-group sequence in a suitable herbarium case where they may be readily consulted and be safe from injury. In the larger

hebaria of the service, where it may be desired to adopt the Dalle Torre & Harms numerical sequence of filing specimens, application should be made to the forester for approval of such rearrangement. Insect damage should be controlled by the use of suitable media such as naphthalene ("moth balls"), corrosive sublimate, and carbon disulphide.

In mounting specimens for the herbarium, the standard white cardboard or linen-ledger mounting sheet should be used. The most satisfactory way of mounting is to use narrow strips, approximately one-eighth to one-fourth inch wide, of adhesive tape, preferably surgeon's isinglass plaster (on silk), always placing the strips at right angles to the stem or other part mounted and firmly pressing to the mounting-sheet surface until rigid attachment to both mounting sheet and specimen is assured. Curved botanical forceps or tweezers for exerting pressure on the mounting plaster in mounting will be found superior to the unaided fingers. Flowers or other parts essential to identification should not be hidden by the mounting plaster. Care should be taken to see that the ends of the specimens are rigid; and, in the case of twigs and stalks, which, unless properly mounted, are easily pried off or broken in handling, the mounting plaster should be placed close to the cut end of the specimen. Thick and heavy mounts, such as woody specimens, may require sewing to make them secure.

Small loose material, such as fruits, seeds, and leaves, which may be needed for further study, should be inclosed in a small envelope (preferably herbarium "pockets" of standard sizes) in such a way as to be conveniently opened, in some corner of the mounting sheet.

COMMON NAMES OF RANGE PLANTS

The advantages of having the English, or "common," names of at least the most important species and genera of range plants uniform throughout the service are obvious, and it shall be the policy of the service to promote, so far as practicable and feasible, the standardization of such names. The booklet of notes on national forest grasses, the preliminary list of common names of national forest range plants, and "Standardized Plant Names"² should be used as a basis for this standardization. Recommendations for changes and additions should be submitted to the Washington office for consideration and approval.

HERBARIUM SUPPLIES

All necessary supplies for this project are available on requisition from the supply depot at Ogden.

² "Standardized Plant Names: A Catalogue of Approved Scientific and Common Names of Plants in American Commerce," by Frederick Law Olmsted, Frederick V. Coville, and Harlan P. Kelsey, subcommittee, American Joint Committee on Horticultural Nomenclature. Salem, Mass., 1923.

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